National Weather Service Attends Prescribed Burn

On May 8, 2007, National Weather Service (NWS) forecaster and former Incident Meteorologist Mike Fowle attended a prescribed burn conducted by the U.S. Fish and Wildlife Service (USFWS) at Horicon National Wildlife Refuge. A prescribed burn is a planned, controlled burn scheduled to accomplish a certain resource objective, such as eliminating invasive plant species. The purpose of the outreach visit was to observe first-hand the importance of weather conditions in prescribed burning operations. In addition, comments were solicited from fire personnel regarding how the NWS can better serve the fire weather community. An informal question and answer session on topics pertaining to fire weather was also conducted by Mr. Fowle.

Fire behavior is heavily influenced by weather conditions. Therefore, the NWS routinely issues site specific "spot forecasts" to federal and state land management agencies (i.e. USFWS, Wisconsin Department of Natural Resources) who engage in prescribed burning. Spot forecasts can also be issued for wildfire incidents that pose a threat to life and property. Accurate short term spot weather forecasts are necessary to ensure the burn is conducted safely and to make sure the resource objectives will be accomplished. Therefore, it is necessary for the NWS and land management agencies to work cooperatively to achieve the desired outcome.

Pre-Burn Briefing: Topics discussed during the pre-burn briefing included an overview of the burn plan, resource objectives, individual and team assignments, safety issues, and the weather forecast for the burn. Important weather elements to consider include wind speed and direction, temperature, relative humidity, stability of the atmosphere, and smoke management parameters.

Examples of equipment used during the burn.

After an initial weather observation is taken to ensure the conditions are favorable, a “test fire” is set to assess fire behavior.

The fire is usually lit by a device called a “drip torch,” although depending on terrain and access, aerial flares can be used as well.

Several photos of the burn in progress. Note the importance of wind speed and direction with respect to fire movement and smoke management issues. Weather observations are routinely taken every half hour to assess changes in temperature, relative humidity, and wind. Subtle changes in these values can have drastic affects on fire behavior.

If the fire becomes very intense, the amount of heat rising into the atmosphere can form a specialized cloud known as a “pyrocumulus cloud.”

The “fire whirl” is another specialized feature that can form during a fire. This feature is a rotating column of air that is stretched vertically due to the very intense heat from the fire.

NWS forecaster Mike Fowle observes the completed burn.

The final result appears to be a success. The invasive plant species have been removed, which should allow more native species to re-emerge.